**Single Replacement Reactions**

|  |  |  |
| --- | --- | --- |
| **Activity Series of Metals** | | |
| **Decreasing reactivity** | Name | Symbol |
| Lithium  Potassium  Calcium  Sodium  Magnesium  Aluminum  Zinc  Iron  Lead  (Hydrogen)  Copper  Mercury  Silver | Li  K  Ca  Na  Mg  Al  Zn  Fe  Pb  H\*  Cu  Hg  Ag |
| *\*Metals from Li to Na will replace H from acids and water; from Mg to Pb they will replace H from acids only* | | |

*Directions*

1. *Write the formulas of the reactants on the left of the arrow.*

* *Pb+2*
* *Zn+1*
* *Ag+1*
* *Ni+2*
* *Fe+3*

1. *Look at the activity series table to determine if the replacement reaction can occur.*
2. *If it can, complete the reaction and balance it. If it cannot, write NR (no reaction) on the product side.*
3. Lead + zinc acetate
4. Iron + aluminum oxide
5. Silver nitrate + copper
6. Sodium bromide + iodine
7. Aluminum bromide + chlorine
8. Sodium iodide + bromine
9. Calcium + hydrochloric acid
10. Magnesium + nitric acid
11. Silver + sulfuric acid
12. Potassium + water
13. Sodium + water

**QUICK LAB: Single Replacement Reaction**

|  |
| --- |
| *CHEMICAL EQUATION:*  ­🡪  Reactants Products |

1. Look at the list of materials. What are the reactants in this lab?

|  |  |
| --- | --- |
| Name | Chemical Formula |
|  |  |
|  |  |

1. Does this reaction have 2 positive elements or 2 negative elements? Circle the correct equation below.

AB + C 🡪 CB + A AB + C 🡪 AC + B

+ - + + - +  + - - + - -

1. Will this replacement reaction occur? How do you know? *Complete sentences.*
2. Predict the products of this chemical reaction and write them in the Chemical Equation box above. Balance the equation if necessary.

**Materials**

* Piece of zinc (Zn+2)
* Copper (II) sulfate (CuSO4) solution
* Small beaker
* Tweezers
* Paper towel

**Procedure**

1. Place the piece of zinc in the beaker and add enough copper (II) sulfate solution to cover the nail. *BE CAREFUL – copper (II) sulfate is toxic.*
2. After 5 minutes, carefully remove the nail from the solution using tweezers and place the nail on the paper towel to dry. Observe any changes that have occurred to the zinc and the solution of CuSO4.
3. Throw the zinc and paper towel in the trash and pour copper (II) sulfate solution down the drain.
4. Wash your beaker and tweezers and place them on the drying rack.
5. Wipe down your table with cleaning spray and a towel.